

P a t e n t   C l a i m s

1. Method for checking a document of value (1), with which
  - the document of value (1) at least in a partial area is illuminated with an intensity ( $I_B$ ) and
  - at one or more measuring places (2) the intensity ( $I_T$ ) of the light transmitted through the partial area of the document of value (1) and the intensity ( $I_R$ ) of the light reflected, in particular remitted, by the partial area of the document of value (1) is captured,  
  
characterized in that
    - the intensities ( $I_T$ ,  $I_R$ ) of the transmitted and reflected light are captured separately,
    - for the measuring place or the individual measuring places (2) the respective sums ( $I_T + I_R$ ) of the intensities ( $I_T$ ,  $I_R$ ) of the transmitted and reflected light are calculated and
    - the sum ( $I_T + I_R$ ) is compared to a predetermined standard value ( $I_S$ ).
2. Method according to claim 1, characterized in that the intensity values ( $I_T$ ,  $I_R$ ) captured from the measuring place or the individual measuring places (2) are corrected before the summation for compensating locally differing measuring conditions.
3. Method according to claim 2, characterized in that the correction is effected for compensating local intensity fluctuations in illumination given when measuring.
4. Method according to claim 2 or 3, characterized in that the correction is effected for compensating locally differing detector specifications.

5. Method according to claim 4, characterized in that each captured intensity value ( $I_T$ ,  $I_R$ ) before the summation is reduced by a dark current measuring value ( $I_{TD}$ ,  $I_{RD}$ ) determined for the respective measuring place (2).
6. Method according to claim 5, characterized in that for determining the dark current measuring values ( $I_{TD}$ ,  $I_{RD}$ ) intensity measurements are effected with switched-off illumination.
7. Method according to any of claims 1 to 6, characterized in that each captured intensity value ( $I_T$ ,  $I_R$ ), optionally reduced by a dark current measuring value ( $I_{TD}$ ,  $I_{RD}$ ), is multiplied with a correction factor (a, b) determined for the measuring place (2) of the respective intensity value ( $I_T$ ,  $I_R$ ).
8. Method according to claim 7, characterized in that the correction factors (a, b) are obtained on the basis of the intensity values, which are determined by means of intensity measurements in reference documents.
9. Method according to any of claims 1 to 8, characterized in that the document of value (1) in a transportation direction (R) is guided past an illumination system (3, 5) and a detector system (4, 6) positioned to this, and with the illumination system (3, 5) at least on one side (13, 14) of the document of value (1) an illumination profile is produced, which extends transverse to the transportation direction (R).
10. Method according to claim 9, characterized in that with a plurality of detector elements, which are positioned in a row at right angles to the transportation direction (R), the intensity values ( $I_T$ ,  $I_R$ ) along a plurality of measuring tracks extending in parallel to the transportation direction (R) are captured.
11. Method according to any of claims 1 to 10, characterized in that the document of value (1) is illuminated from one side (13) and that with a first detector device (8) positioned in the area of the same side (13) of the document of value (1) the intensity ( $I_R$ ) of the reflected portion of light and with a second detector device (9) positioned in the area of the opposite side (14) of the

document of value (1) the intensity ( $I_T$ ) of the transmitted portion of light is captured.

12. Method according to any of claims 1 to 10, characterized in that the document of value (1) alternately is illuminated from a first and from an opposite second side (13, 14), and with a detector device (12) positioned in the area of the first side (13) of the document of value (1) correspondingly alternately are captured the intensity ( $I_T$ ) of the light transmitted through from the second side (14) of the document of value (1) and the intensity ( $I_R$ ) of the reflected portion of the light incident from the first side (13) on the document of value (1).
13. Checking device for checking documents of value (1), comprising
  - an illumination system (3, 5), so as to illuminate a document of value (1) at least in a partial area with an intensity ( $I_B$ )
  - a detector system (4, 6), so as to capture from one or more measuring places (2) the light transmitted through the document of value (1) and the light reflected, in particular remitted, by the document of value,characterized in that
  - the illumination system (3, 5) and the detector system (4, 6) are designed to separately capture the intensity ( $I_T$ ,  $I_R$ ) of the transmitted light and of the reflected light and
  - an evaluation unit is provided for the summation ( $I_T + I_R$ ) of the intensities ( $I_T$ ,  $I_R$ ) of the transmitted and reflected light for the measuring place or the individual measuring places (2) and for comparing the sum ( $I_T + I_R$ ) to a predetermined standard value ( $I_S$ ).
14. Checking apparatus according to claim 13, characterized in that the evaluation unit comprises a correction unit for correcting the captured intensity values ( $I_T$ ,  $I_R$ ) of the transmitted light and of the reflected light for the measuring place or the individual measuring places (2) for the purpose of compensating locally differing measuring conditions, as well as an addition unit for adding the

corrected intensity values for the measuring place or the respective measuring places (2).

15. Checking device according to claim 14, characterized in that the correction unit has means, so as to compensate local intensity fluctuations in the illumination produced by the illumination system (3, 4) during measuring.
16. Checking device according to claim 14 or 15, characterized in that the correction unit has means, so as to compensate locally differing specifications of the detector system (4, 6).
17. Checking device according to any of claims 13 to 16, characterized by a storage device with dark current measuring values ( $I_{TD}$ ,  $I_{RD}$ ) deposited for different measuring places (2), which correspond to transmission or reflection intensity values captured with switched-off illumination, and/or with correction factors (a, b), deposited for different measuring places (2), for the transmission or reflection intensity values determined by a measuring.
18. Checking device according to any of claims 13 to 17, characterized by a transportation device, so as to guide the document of value (1) for the purpose of a measuring in a transportation direction (R) past the illumination system (3, 5) and the detector system (4, 6) positioned to this.
19. Checking device according to claim 18, characterized in that the illumination system (3, 5) produces an illumination profile extending transverse to the transportation direction (R).
20. Checking device according to claim 19, characterized in that the detector system (4, 6) has a detector device (8, 9, 12), which comprises a plurality of detector elements positioned in a row at right angles to the transportation direction (R).
21. Checking device according to any of claims 13 to 20, characterized in that the illumination system (3) has an illumination device (7), which illuminates the

document of value (1) from a first side (13), and that the detector system (4) has a first detector device (8), which

- is allocated to the illumination device (7),
- is positioned at the same side (13) of the document of value (1) and
- captures the intensity ( $I_R$ ) of the reflected portion of light,

and a second detector device (9), which

- is allocated to the illumination device (7),
- is positioned at the opposite side (14) of the document of value (1) and
- captures the intensity ( $I_T$ ) of the transmitted portion of light.

22. Checking device according to any of claims 13 to 20, characterized in that the illumination system (5) has

- a first illumination device (10), which illuminates the document of value (1) at least in a partial area from a first side (13),
- a second illumination device (11), which illuminates the document of value (1) in the partial area from a second side (14), and
- a control device, which activates the illumination device (10, 11) in such a way that alternately the first or the second illumination device (10, 11) illuminates the document of value (1), and
- that the detector system (6) has a detector device (12) disposed on the first side (13) and allocated to the two illumination devices (10, 11), so as to alternately capture the intensity ( $I_T$ ) of the light transmitted through from the second side (14) of the document of value (1) and the intensity ( $I_R$ ) of the reflected portion of the light incident from the first side (13) on the document of value (1).